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CLAIMS 1-57 CANCEL

58. (New) A system for producing optically detectable servo tracks on a magnetic tape having a recording side and a non-recording side, comprising:

a reel assembly for passing the magnetic tape through a work area, and

a marking mechanism which includes:

a light source emitting a first beam of optical radiation; and

a pattern generator which splits the first beam into a plurality of spaced-apart second beams, the plurality of spaced-apart second beams spanning a plurality of the servo tracks, and

a controller that controls an intensity of the first beam so as to provide a time-dependent sequence of the second beams,

the time-dependent sequence of the second beams forming the optically detectable servo tracks on the non-recording side of the magnetic tape as the tape passes through the work area.

59. (New) The system according to claim 58, wherein the light source includes a laser.

60. (New) The system according to claim 59, wherein the laser comprises a pulsed laser.

61. (New) The system according to claim 59, wherein the laser comprises a continuous wave laser.

62. (New) The system according to claim 58, wherein the pattern generator includes an attenuator capable of attenuating the intensity of at least one of the first beam and the second beams.

63. (New) The system according to claim 58, wherein the pattern generator includes means for controlling a pointing characteristic of at least one of the first beam and the second beams.

64. (New) The system according to claim 58, wherein the pattern generator includes a control system for providing a closed-loop control of a characteristic representative of the power of the first beam.

65. (New) The system according to claim 58, wherein the pattern generator includes a control system for providing closed-loop control over a characteristic representative of the pointing of the first beam.

66. (New) The system according to claim 58, wherein the marking mechanism further includes a beam expander that expands and collimates the first beam.

~~67. (New) The system according to claim 58,~~ wherein the pattern generator includes a diffractive optical element comprising a one-dimensional Fourier array element having a continuous phase profile for splitting the first beam into the second beams.

68. (New) The system according to claim 58, wherein the pattern generator includes

a first diffractive optical element for splitting the first beam into multiple beams, and

a second diffractive optical element for splitting the multiple beams into the second beams, the second beams being arranged in a plurality of subsets, with a subset of the second beams comprising a multiplicity of the second beams.

69. (New) The system according to claim 68, wherein the pattern generator includes means for controlling a pitch between at least one of the subsets of beams and the beams in the subsets of beams.

70. (New) The system according to claim 58, wherein the pattern generator includes a two-dimensional diffractive optical element that generates the second beams.

71. (New) The system according to claim 58, wherein the pattern generator includes an optical element for projecting and focusing the plurality of second beams onto the magnetic tape.

72. (New) The system according to claim 71, wherein the optical element is a lens.

73. (New) The system according to claim 58, wherein the pattern generator includes at least one refractive segmented mirror that at least one of reflects and transmits the first beam to produce the plurality of second beams.

74. (New) The system according to claim 73, wherein the pattern generator includes at least two refractive segmented mirrors that are arranged sequentially.

75. (New) The system according to claim 58, wherein the pattern generator includes polarizing optical elements that divide the first beam into two beams of substantially equal intensity.

76. (New) The system according to claim 73, wherein the pattern generator includes ~~polarizing optical elements that divide each of the second~~ beams into two respective beams of substantially equal intensity.

77. (New) The system according to claim 58, wherein the servo track comprises servo marks arranged along the servo track.

78. (New) The system according to claim 77, wherein the controller controls the intensity so as to intermittently produce the servo marks.

79. (New) The system according to claim 77, wherein the controller controls the intensity so as to control the size of the servo marks marked on the magnetic tape.

80. (New) The system according to claim 58, wherein the marking mechanism includes a stabilizer having a flat surface, with the recording side of the magnetic tape being urged against the flat surface as the magnetic tape passes over the flat surface, thereby maintaining a focus of the second beams with respect to the non-recording side of the passing tape during the formation of the optically detectable servo tracks.

81. (New) The system according to claim 80, wherein the flat surface comprises a ceramic material.

82. (New) The system according to claim 80, wherein the stabilizer includes a mechanical stop disposed proximate to the flat surface for interfering with lateral movement of the passing magnetic tape, thereby reducing the lateral movement during marking by the laser.

83. (New) The system according to claim 58, further comprising a cleaner for removing debris from the tape as the tape passes through the work area, thereby preventing particulate debris from fouling the magnetic tape.

84. (New) The system according to claim 83, wherein the cleaner includes a gas flow generator providing a flow of gas across a surface of the magnetic tape, for carrying debris away from the tape.

85. (New) The system according to claim 83, wherein the cleaner includes a tape cleaner in contact with a surface of the magnetic tape for removing debris therefrom.

86. (New) The system according to claim 58, further comprising a burnisher for burnishing the magnetic tape.

87. (New) The system according to claim 58, further including a verification sensor capable of detecting the servo track and of measuring a characteristic of the servo track, the characteristic being representative of successful recording of the servo track on to the magnetic tape.

88. (New) The system according to claim 87, wherein the verification sensor includes control means for controlling the marking mechanism, in response to the characteristic representative of successful recording of the servo track on the magnetic tape.

89. (New) The system according to claim 87, wherein the verification sensor includes an edge detector for detecting a lateral tape movement of the magnetic tape.

90. (New) The system according to claim 87, wherein the verification sensor includes an optical sensor for detecting an optically detectable characteristic of the servo track.

91. (New) The system according to claim 90, wherein the optical sensor is a scanning optical sensor.

92. (New) The system according to claim 77, further including a verification sensor capable of detecting the servo track , wherein the verification sensor includes an optical sensor for detecting an optically detectable characteristic representative of the presence of the servo mark on the servo track.

93. (New) The system according to claim 92, wherein the verification sensor includes means for detecting an optically detectable characteristic representative of the size of the servo mark on the magnetic tape.

94. (New) The system according to claim 92, wherein the verification sensor includes means for detecting an optically detectable characteristic representative of the location of a mark on the magnetic tape.

95. (New) An adaptor board capable of being integrated into a system for producing servo tracks on a magnetic tape, comprising

a guide assembly for carrying magnetic tape through a work area, and

a marking mechanism for inscribing a plurality of servo tracks onto the magnetic tape, the marking mechanism including

a laser for projecting a laser beam along an optical path,

a beam forming device disposed within the optical path and capable of controlling characteristics of the laser beam to form a conditioned beam having a selected beam size and power, and

a pattern generator for forming the conditioned laser beam into a plurality of spaced-apart second beams, and for projecting the plurality of spaced-apart second beams into the work area for forming the plurality of servo tracks on the magnetic tape.

96. (New) The adaptor board of claim 95, wherein the guide assembly includes rollers.

97. (New) The adaptor board of claim 95, wherein the guide assembly includes a stabilizer having a flat surface, with the magnetic tape being urged against the flat surface as the magnetic

tape passes over the flat surface, thereby maintaining a focus of the second beams with respect to the passing tape during the formation of the optically detectable servo tracks.

98. (New) The adaptor board according to claim 97, wherein the stabilizer includes a mechanical stop disposed proximate to the flat surface for interfering with lateral movement of the passing magnetic tape, thereby reducing the lateral movement during the formation of the plurality of servo tracks on the magnetic tape.

99. (New) The adaptor board of claim 95, wherein the pattern generator includes

a beam separator that splits the conditioned beam into the plurality of the spaced-apart intermediate beams;

a diffractive optical element that splits each of the intermediate beams into a respective subset of the plurality of spaced-apart second beams; and

at least one focusing element that projects the subsets of spaced-apart second beams on the magnetic tape.